

SYLLABUS
ECNS 562: Econometrics II
Spring 2012

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Class Website: www.montana.edu/ebelasco/ecns562
Class Hours: TTH 9:30 – 10:45am
Room: LINH 233

Course Description:

The primary objective of this course is to focus on advanced econometric techniques in a highly empirical manner. The intention is to bridge the gap between fundamental econometric theory and sound applied economic research. Content discussed in this course has been chosen to familiarize the class with methods used in current empirical research. In addition to adding to your econometric literacy, this course aims to offer a wide range of tools that can be used in many different research settings and topics. The primary emphasis will be on gaining an intuitive grasp of how models work and what is needed to implement them in empirical economic research.

This course will be taught at a level suitable for graduate students who are comfortable with basic econometrics and statistics. While we will not spend an excessive amount of time on theory, the use of R software in computation will demand a commitment to learn computer programming. While there is a learning curve to programming, I believe it often reinforces theoretical ideas discussed in class.

Prerequisites:

ECNS 561 is a formal prerequisite. Students should have a good understanding of probability, statistics, calculus, matrix algebra, and basic OLS regression techniques (as learned in ECNS 561). While computer programming will be used in this course, no previous programming experience will be required.

Expected Learning Outcomes:

Upon successful completion of this course, students will be able to:

- (1) Understand more advanced estimation procedures, inference methods, and model formulation techniques for empirical econometric analysis of cross sectional, time-series, and panel data.
- (2) Address different estimation/specification issues typically faced in applied economic research as it pertains to: (a) discrete choice models, (b) limited dependent variables, (c) time-series data, and (d) panel data.
- (3) Conduct appropriate econometric analysis and make inference through the use of R programming language.

Recommended Texts:

Greene, William. *Econometric Analysis*. 6th Ed. Prentice Hall Co. 2008. **(G)**

Cameron, A.C. and P.K. Trivedi. *Microeconometrics: Methods and Applications*. Cambridge University Press, 2005. **(CT)**

Train, K. *Discrete Choice Methods with Simulation*. 2nd Edition. Cambridge University Press, 2009 (Chapters can be downloaded for free from Dr. Train's website: <http://elsa.berkeley.edu/books/choice2.html>) **(T)**

Wooldridge, Jeffrey M. *Introductory Econometrics: A Modern Approach*, 2E. South-Western College Publishing, 2003. **(W)**

Baltagi, Badi H. *Econometric Analysis of Panel Data*. 4th Edition. John Wiley & sons Ltd, 2008. **(BB)**

Software: R software will be used throughout the course with some time spent initially to get familiar with the package. There are plenty of new books as well as plenty of online support that will be helpful to familiarize you with matrix programming. Given there are many resources online, I will provide some on the course website. An investigation online will often find specific help for R issues. The use of R was chosen because it offers a format that offers more flexibility than “canned” packages, such as SAS. Also, through programming our models from the ground up, we will gain a clearer understanding of the empirical techniques we are discussing. R is freely available and can be downloaded from (www.r-project.org). While it will be made available in the computer lab, it should be fairly straightforward to download onto your office desktop computer. At least two or three introductory R labs will be planned throughout the course.

Course Requirements:

1. Exams – There will be one midterm exam and one cumulative final.
2. Problem Sets / Homeworks – Problem sets and homeworks are essential components of this course and allow for practice of concepts learned in class in addition to giving an opportunity to gain programming experience. I encourage group-work but ask that everyone turn in their own write-up.
3. Term Paper –The intention of this project is to utilize the methods and theory we’ve discussed in class. This process includes collecting data, conducting economic analysis, data dissemination, and providing comprehensive analysis on your topic. The paper should be about 10-15 pages long (including tables/figures), typed and double-spaced. To ensure progress, I will set up a checkpoint along the way where you will present your research topic to the class in order to obtain initial feedback. More specific information will be provided.

Grading:

Midterm Exam	30%
Final Exam	35%
Term Paper	20%
Problem Sets/HW	15%

	100%

Course Outline: (Note that this is still tentative and subject to change)

Date	Topic	Hmwk Due	Readings
Thur., Jan. 12	OLS Review / Simulation		
Tues., Jan. 17	IV/2SLS Estimation I		W Ch. 15; G Ch. 8; CT pg. 95-112
Thur., Jan. 19	IV/2SLS Estimation II		
Tues., Jan. 24	Probability and Distribution Theory		W App. B; G App. B
Thur., Jan. 26	Maximum Likelihood Estimation		G Ch. 14; CT pg. 139-146; T Ch. 8
Tues., Jan. 31	Binary Choice Models I		G pg. 681-715; CT Ch. 14
Thur., Feb. 2	Binary Choice Models II	1	
Tues., Feb. 7	Discrete Choice Models I		CT Ch. 15; G Ch. 18; Train Ch. 1-6
Thur., Feb. 9	Discrete Choice Models II		
Tues., Feb. 14	Discrete Choice Models III		
Thur., Feb. 16	Censoring and Truncation I	2	W Ch. 17; G Ch. 19; CT Ch. 16
Tues., Feb. 21	Censoring and Truncation II		
Thur., Feb. 23	Censoring and Truncation III		
Tues., Feb. 28	Systems of Equations I		W Ch. 16
Thur., Mar. 1	Systems of Equations II	3	
Tues., Mar. 6	Exam Review		
Thur., Mar. 8	MIDTERM EXAM		
Tues., Mar. 13	Spring Break – OFF		
Thur., Mar. 15	Spring Break – OFF		
Tues., Mar. 20	Systems of Equations III		
Thur., Mar. 22	Systems of Equations IV / Initial Project Presentations		
Tues., Mar. 27	Time Series I		G Ch. 20-21
Thur., Mar. 29	Time Series II		
Tues., Apr. 3	Time Series III		
Thur., Apr. 5	Time Series IV	4	
Tues., Apr. 10	Panel Data I		BB Ch. 1-4
Thur., Apr. 12	Panel Data II		
Tues., Apr. 17	Panel Data III		
Thur., Apr. 19	Panel Data IV	5	
Tues., Apr. 24	Final Project Presentations		
Thur., Apr. 26	Exam Review		
Wed., May. 2	FINAL EXAM (12:00pm – 1:50pm)		